

REMARKS

Claims 2-5, 7-10, 12 and 15-26 are pending in this application, of which claims 7, 8, 12, 15, 16 and 23-26 have been withdrawn from consideration. Claim 22 has been amended. No new claims have been added.

In the Advisory Action of September 21, 2004, the Examiner indicated that the filing of the verified English translation of JP Application No. 2001-039252 with Applicants' response of September 8, 2004 has overcome the 35 USC §102(e) rejection of claims 2 and 17-22 as anticipated by **Watanabe et al.**

Claims 2, 17 and 19-22 stand rejected under 35 USC §103(a) as being unpatentable over Otsuka et al., U.S. Patent No. 5,568,501 (hereinafter "**Otsuka et al.**") in view of Adachi et al., "Chemical Etching of InGaAsP/Inp DH Wafer" (hereinafter "**Adachi et al.**").

Applicants respectfully traverse this rejection.

The Examiner newly cites **Adachi et al.**. The Examiner states that it would have been obvious to the skilled artisan to modify **Otsuka et al.**'s process by including the use of the etchant containing hydrochloric acid and acetic acid as taught by **Adachi et al.** in order to better control the etching process and to avoid overetching.

The Examiner appears to maintain that **Otsuka et al.** teaches the claimed method including the steps of forming a stepped structure of InP and wet-etching the composite structure.

It should be noted that the Examiner states that InP *layer 6 is grown at regions adjacent to the stacked structure to form a stepped structure of InP*. The Examiner points to Figs. 1A & 2A, 3C, col. 7, lines 9-15 and 30-35. Fig. 2A is a cross-section view showing the main portions of the laser shown in Fig. 1A. *However, we note that the structure formed is not wet-etched as presently required.* Rather, layer 7 is grown on layer 6, whereby a planar, not a stepped structure of InP is formed.

If the Examiner is taking the position that layer 6 is “thinner” and stepped because it is wet-etched to be thinner, Otsuka et al. still does not disclose wet-etching a composite structure including a stepped structure of InP. The present claims require first forming the stepped structure and then wet-etching the composite structure.

Accordingly, even if Otsuka et al. forms the stepped layer 6, by wet etching, Otsuka et al. does not disclose wet-etching the resultant composite structure including the stepped layer 6, as presently required. Rather, Otsuka et al. teaches then growing layer 7 on layer 6.

Figs. 2 and 3 are described in Otsuka et al. at cols. 6 -10. At col. 7, lines 36-43, Otsuka et al. discloses wet-etching the stacked structure not having an adjacent InP layer, to form the structure shown in Fig. 3B. Figure 3 is most relevant and shows the process steps performed to form the laser shown in Figs. 1 and 2.

Thereafter, InP layers 6 and 7 are grown (with layers 14 and 15 in place), layers 14 and 15 are then removed (note that the structure produced by layers 6 and 7 is not “stepped”), InP blocking

layer 8, pGaInAsP barrier reducing layer 9 and a p-GaInAs contact layer 10 are grown. Note that the structure after removal of layers 14 and 15, is not wet-etched. See Fig. 3. Electrodes are deposited (11 and 12), to obtain the structure shown in Fig. 3C.

Otsuka et al. does not teach wet-etching the above noted structure, let alone wet etching using an etchant containing hydrochloric acid and acetic acid, as presently required.

The Examiner states that Otsuka et al. teaches etching layer 20 using acetic acid and thinning the InP layer 6. However, Otsuka et al. teaches at col. 7 and in Figs. 2 and 3, preferentially etching cap layer 14 using an acetic acid type etchant.

Thus, the 35 USC §103(a) rejection should be withdrawn.

Claims 3-5 and 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants respectfully defer this action until a FINAL Office Action, if any, is received.

An interview was conducted with the Examiner on October 6, 2004 to discuss whether or not claim 22 contained the steps of (b) first, forming a stepped structure and (c) second, wet-etching the composite structure defined in step (b).

The Examiner urged that the listing of steps (a), (b) and (c) does not define any particular order of the performance of the steps, but Applicants argued that because a composite structure was defined in step (b), the wet-etching of the composite structure in step (c) must necessarily follow step

(b). The Examiner then indicated that this argument might be looked upon favorably if the term "defining a composite structure" were amended to read "forming a composite structure".

Accordingly, claim 22 has been so amended.

In view of the aforementioned comments, claims 2-5, 9-10 and 17-22, as amended, are in condition for further examination.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Petition for Extension of Time